



United States Department of Agriculture

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Updates Hydric Soil Indicators

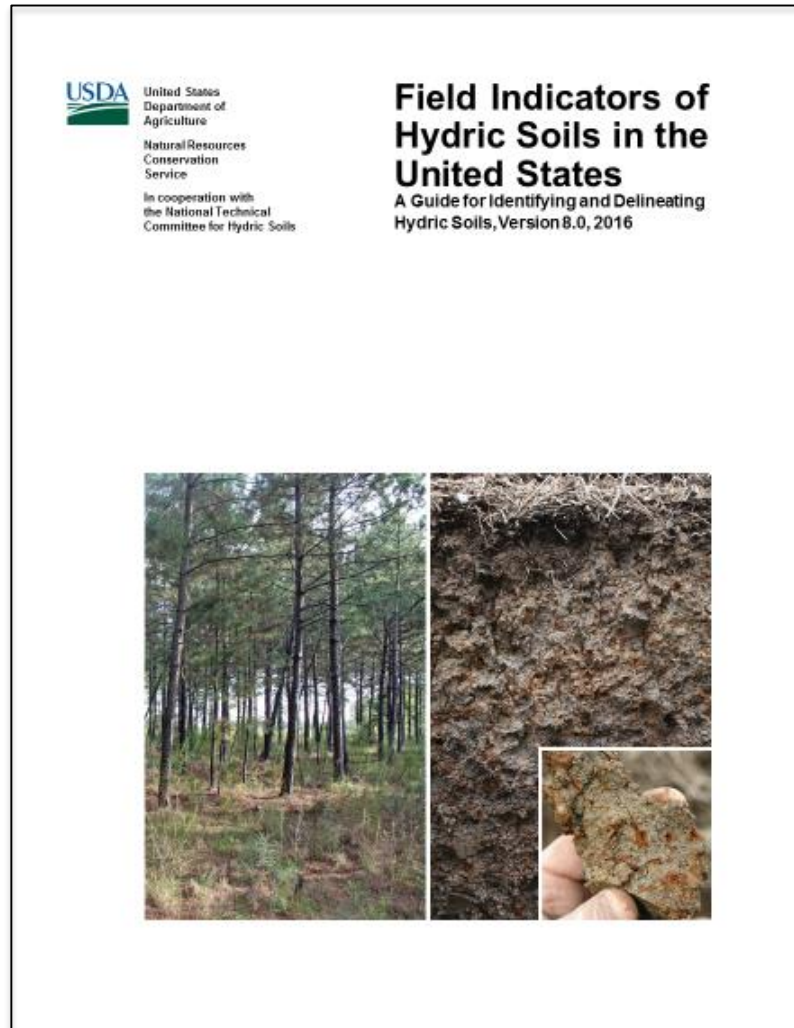
April 18, 2017

Donald Parizek, 12-TOL MLRA
Soil Survey Project Leader

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New Version 8.0 of the Field Indicators of Hydric Soils in the United States

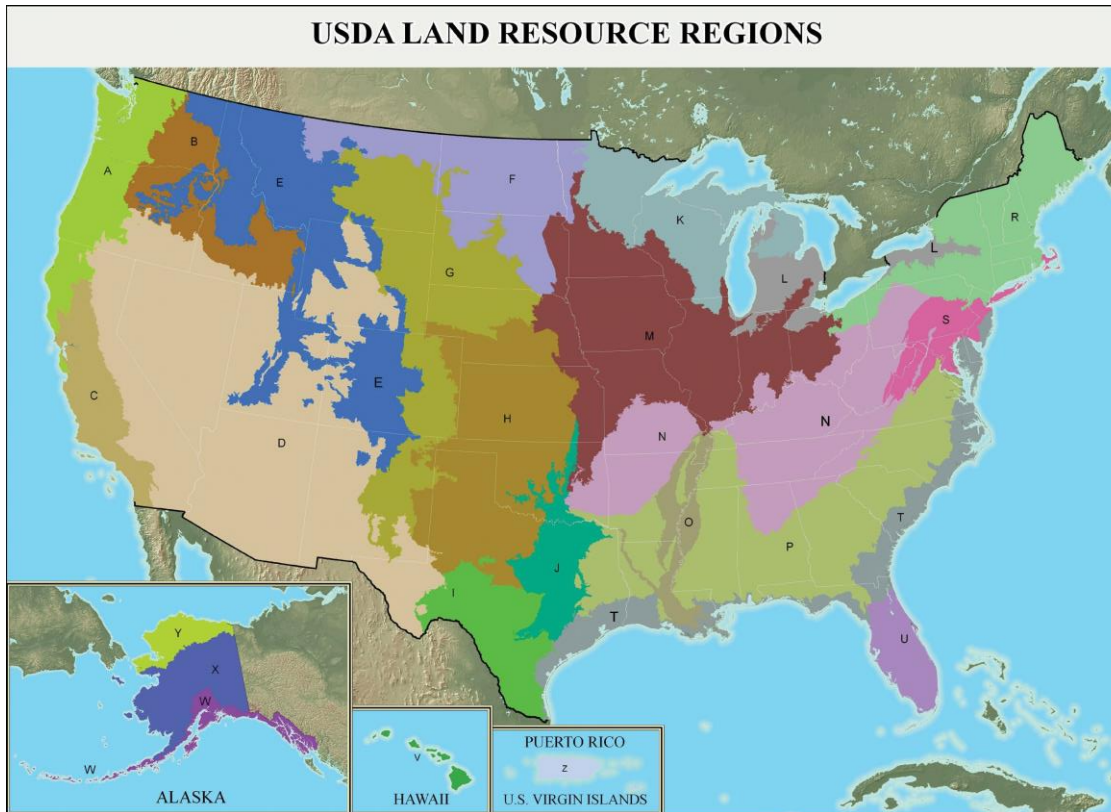


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Land Resource Region R



Available Hydric Indicators in LRR (R)
Version 8.0

A1, A2, A3, A4, A5, A11, A12, S1, S4, S5, S6, S7, S8, S9, F2, F3, F6, F7, F8, F21 (MLRA 145)

For Testing in LRR (R)
S3, F12, F22, TA6 (MLRAs 144A and 145) "Mesic Areas Only"

View the list of no longer Approved for use indicators (extinct) on page 45.

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Important Concepts When Applying The Indicators

- A - Indicators are for use in All Soils Organic, Loamy or Sandy soil textures, example A2. - Histic Epipedon
- S – Indicators are for use with layers of “Sandy Soils”, loamy fine sand or coarser, example S5. – Sandy Redox
- F - Indicators are for use in layers of “Loamy and Clayey Soils”, loamy very fine sand and finer, example F3.- Depleted Matrix.
- In soils with multiple texture classes it is permissible to combine indicators if all requirements for the indicator is met except thickness, use the most restrictive thickness.
- Some indicators are MLRA specific, example F21. Red Parent Material, approved for use in MLRA 145



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Additional Important Concepts when Applying the Indicators In LRR (R)

- Indicators are intended to be “proof positive” or avoiding false positives
- Intended for wetland delineation, the interior of the wetland may not satisfy an indicator
- In LRR (R) depth measurements should be made starting at the actual soil surface for A1, A2 and A3
- Start measurements for A11, A12 and for testing indicators allowing muck textures at the muck or mineral soil surface (below the mucky peat or peat)
- All other indicator measurements begin at the mineral soil surface
- A12 – Thick dark surface often requires the professional to dig deeper than the normal 20 in.

Loonmeadow
Series
A11. Depleted
Below Dark Surface

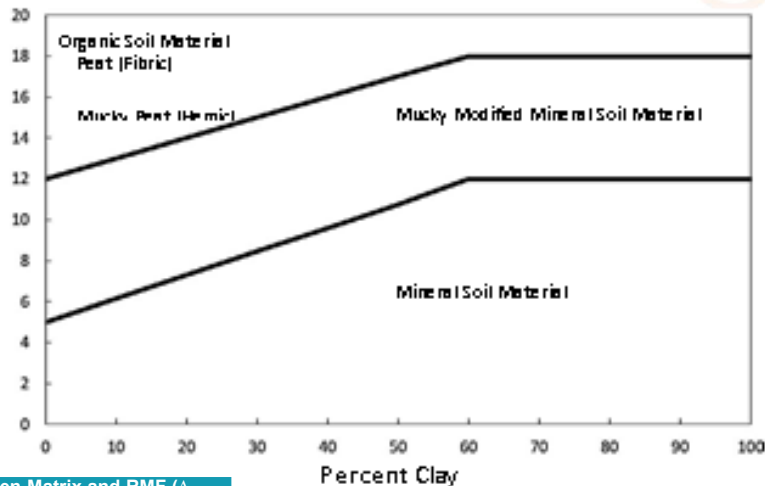


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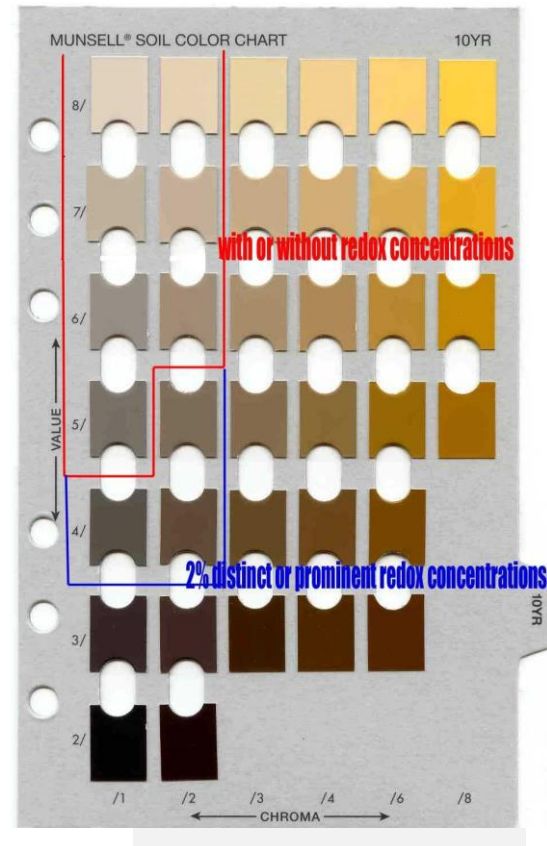
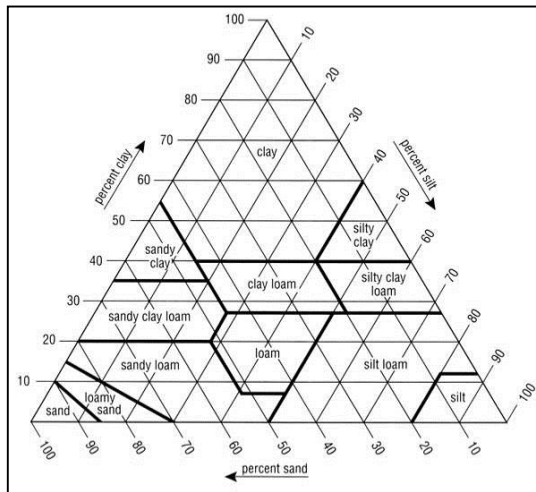
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Helpful Charts



Contrast Class	Code	Difference in Color Between Matrix and RMF (Δ means "difference between")			
Faint	F	Hue (h)	Value (v)		Chroma (c)
		$\Delta h = 0$;	$\Delta v \leq 2$	and	$\Delta c \leq 1$
		$\Delta h = 1$;	$\Delta v \leq 1$	and	$\Delta c \leq 1$
Distinct	D	$\Delta h = 2$;	$\Delta v = 0$	and	$\Delta c = 0$
		$\Delta h = 0$;	$\Delta v \leq 2$	and	$\Delta c > 1$ to < 4
		or	$\Delta v > 2$ to < 4	and	$\Delta c < 4$
		$\Delta h = 1$;	$\Delta v \leq 1$	and	$\Delta c > 1$ to < 3
		or	$\Delta v > 1$ to < 3	and	$\Delta c < 3$
		$\Delta h = 2$;	$\Delta v = 0$	and	$\Delta c > 0$ to < 2
Prominent	P	or	$\Delta v > 0$ to < 2	and	$\Delta c < 2$
		$\Delta h = 0$;	$\Delta v \geq 4$	or	$\Delta c \geq 4$
		$\Delta h = 1$;	$\Delta v \geq 3$	or	$\Delta c \geq 3$
		$\Delta h = 2$;	$\Delta v \geq 2$	or	$\Delta c \geq 2$
		$\Delta h \geq 3$;			



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A12. Thick Dark Surface

A12. Thick Dark Surface. *For use in all LRRs.*

A layer at least 15 cm (6 inches) thick with a depleted or gleyed matrix that has 60 percent or more chroma of 2 or less starting below 30 cm (12 inches) of the surface. The layer(s) above the depleted or gleyed matrix must have value of 2.5 or less and chroma of 1 or less to a depth of at least 30 cm (12 inches) and value of 3 or less and chroma of 1 or less in any remaining layers above the depleted or gleyed matrix. In any sandy material above the depleted or gleyed matrix, at least 70 percent of the visible soil particles must be masked with organic material, viewed through a 10x or 15x hand lens. Observed without a hand lens, the particles appear to be close to 100 percent masked.

User Notes Very Important

User Notes: This indicator applies to soils that have a black layer 30 cm (12 inches) or more thick and have value of 3 or less and chroma of 1 or less in any remaining layers directly above a depleted or gleyed matrix (fig. 17). This indicator is most often associated with over thickened soils in concave landscape positions. A depleted matrix requires value of 4 or more and chroma of 2 or less. Redox concentrations, including soft iron-manganese masses and/or pore linings, are required in soils with matrix colors of 4/1, 4/2, or 5/2. A, E, and calcic horizons may have low chromas and high values and may therefore be mistaken for a depleted matrix; however, they are excluded from the concept of depleted matrix unless the soil has common or many distinct or prominent redox concentrations occurring as soft masses or pore linings.

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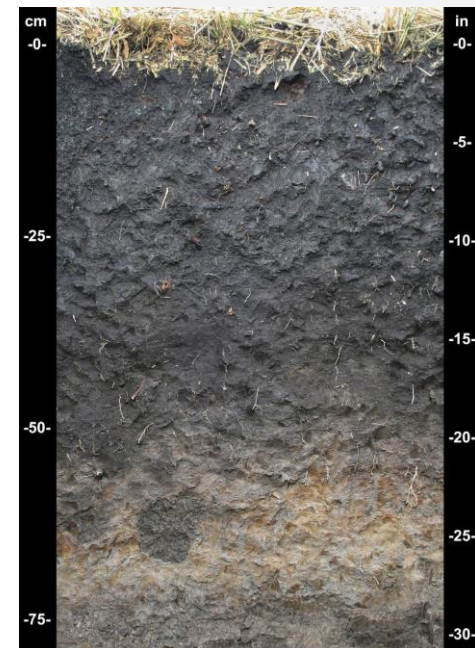
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A12. Thick Dark Surface

- Very common in the our region especially down slope from present and past agricultural areas
- Found in till, outwash, and other parent materials
- Requires deep observations at times!
- Very strict color requirements in the upper 12 inches of the surface, many exclusions based on this
- These soils may also meet F6 at times

A12. Thick Dark Surface

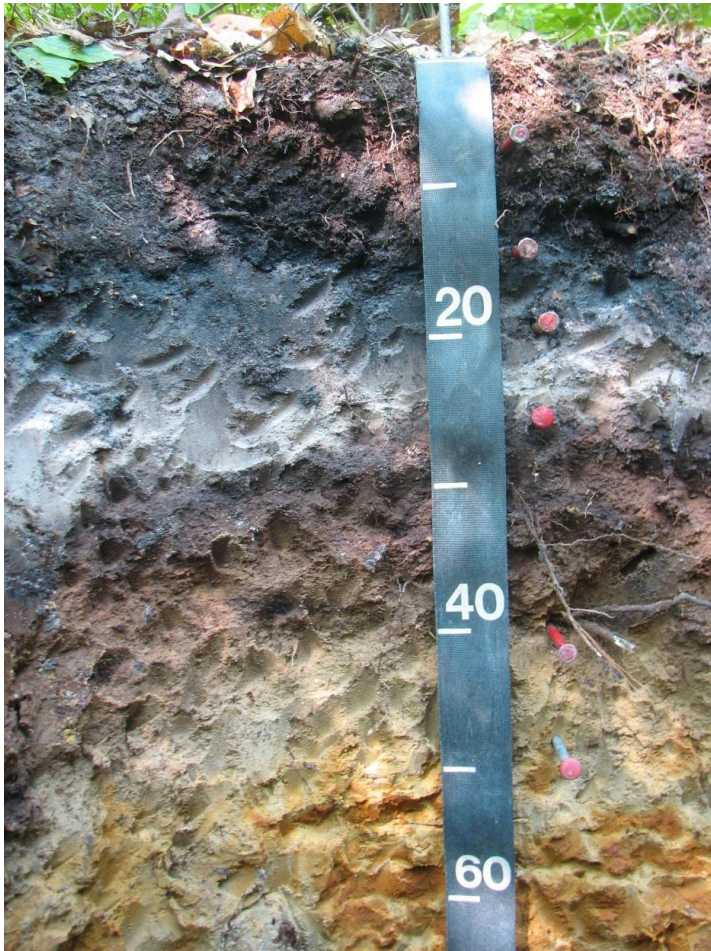


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TA6. Mesic Spodic



TA6.—Mesic Spodic. *For testing in MLRAs 144A and 145 of LRR R and MLRA 149B of LRR S.* A layer 5 cm (2 inches) or more thick, starting at a depth ≤ 15 cm (6 inches) from the mineral soil surface, that has value of 3 or less and chroma of 2 or less and is underlain by either:

- One or more layers 8 cm (3 inches) or more thick occurring at a depth ≤ 30 cm (12 inches) from the mineral soil surface, having value and chroma of 3 or less, and showing evidence of spodic development; or
- One or more layers 5 cm (2 inches) or more thick occurring at a depth ≤ 30 cm (12 inches) from the mineral soil surface, having value of 4 or more and chroma of 2 or less, and directly underlain by a layer(s) 8 cm (3 inches) or more thick having value and chroma of 3 or less and showing evidence of spodic development.

User Notes: This indicator is used to identify wet soils that have spodic materials or that meet the definition of Spodosols. The layer that has value of 4 or more and chroma of 2 or less is typically described as an E or Eg horizon (typically having a color pattern referred to as stripped or partially stripped matrices). The layers with evidence of the accumulation of translocated organic matter typically are described as Bh, Bhs, Bhsm, Bsm, or Bs horizons. These layers typically have several color patterns or cementation indicative of translocated iron, aluminum, and/or organic matter.

Depression on
ground moraine in
MLRA 144A



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F21. Red Parent Material

For use in MLRA 127 of LRR N; **MLRA 145** of LRR R; and MLRAs 147 and 148 of LRR S; for **testing in all soils derived from red parent materials**. A layer derived from red parent materials (see Glossary) that is at least 10 cm (4 inches) thick, starting at a depth ≤ 25 cm (10 Inches) from the soil surface with a **hue of 7.5YR or redder**. **The matrix has a value and chroma greater than 2 and less than or equal to 4**. The layer must contain **10 percent or more depletions and/or distinct or prominent concentrations occurring as soft masses or pore linings**. Redox depletions should differ in color by having:

- A minimum difference of one value higher and one chroma lower than the matrix, or
- Value of 4 or more and chroma of 2 or less

Poorly Drained
Wilbraham Soil in
MLRA 145



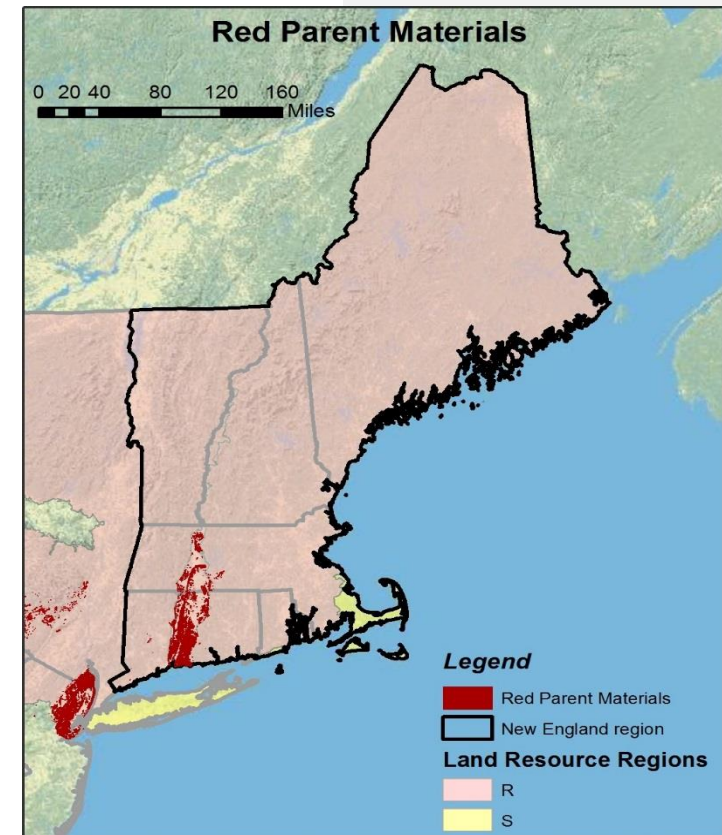
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Problematic Red Parent Material

User Notes: This indicator was developed for use in areas of red parent material, such as residuum in the Piedmont Province Triassic lowlands section or the Paleozoic “red beds” of the Appalachian Mountains, and in alluvium or colluvium derived from these materials. In glaciated areas, the indicator may form in glacial till, outwash, deltaic sediments, or glaciolacustrine sediments derived from similar red lithologies. In order to confirm that it is appropriate to apply this indicator to particular soils, soils formed from similar parent materials in the area should have been evaluated to determine their Color Change Propensity Index (CCPI) and be shown to have CCPI values below 30 (Rabenhorst and Parikh, 2000.) It cannot be assumed that sediment overlying red colored bedrock is derived solely from that bedrock. The total percentage of all redox concentrations and redox depletions must add up to at least 10% to meet the threshold for this indicator.



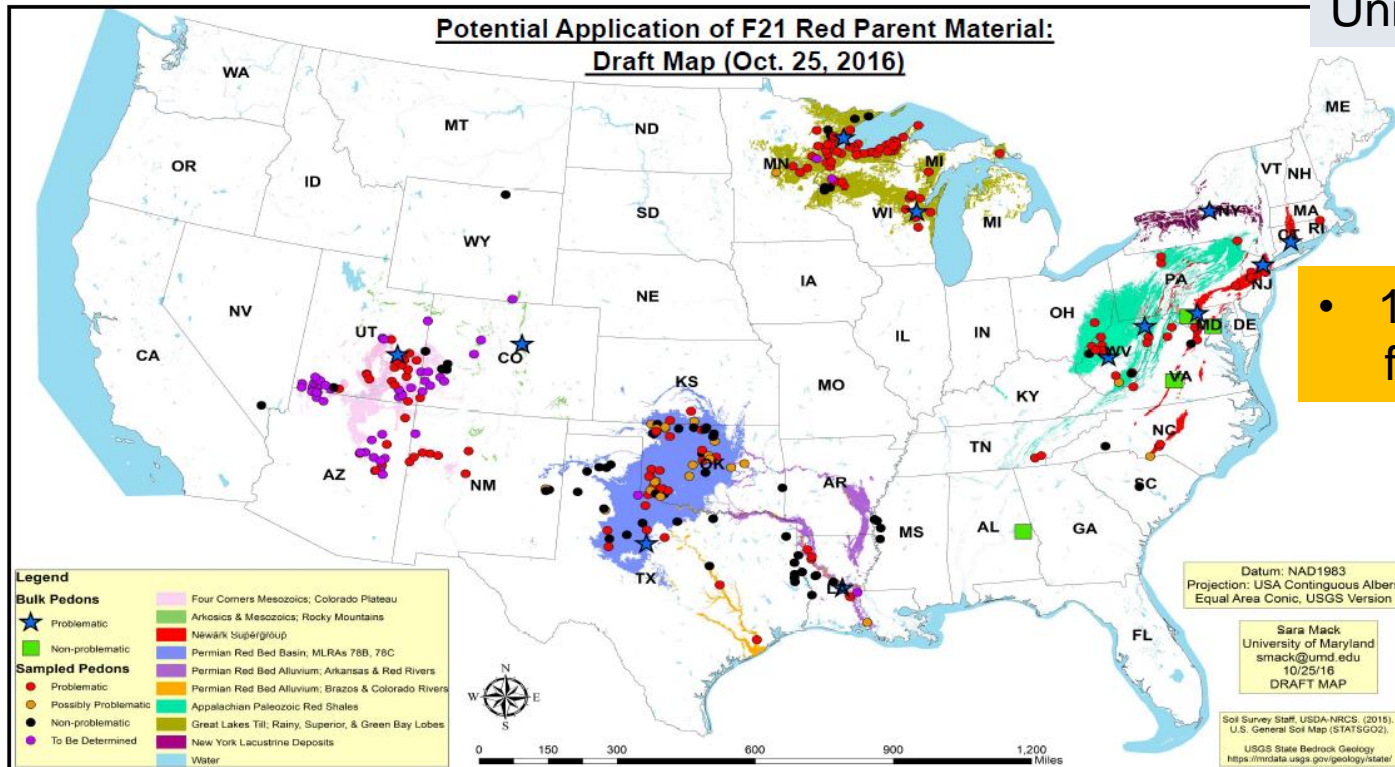
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Potential Problematic Red Parent Material Draft Map of the U.S.

Sara Mack
University of Maryland



• 1,200 CCPI samples from 450 sites

Figure 3. Map of areas where problematic RPM soils and geologies are recognized (thus application of the F21 RPM indicator is appropriate), based on CCPI analyses of soil samples submitted for the RPM project. Approximately 10 "groups" of soils and their associated geologies have been identified as problematic RPM, all in association with sedimentary, hematite-rich "red bed" deposits, or the alluvial, colluvial, and/or glacial materials derived from them. No problematic RPM has been identified in HI, AK, or Puerto Rico. Star and square points on the map are locations where bulk samples were collected to explore the cause of problematic RPM.

In NE associated With
Mesozoic-aged (Triassic and Jurassic) sedimentary
rocks in MLRA 145

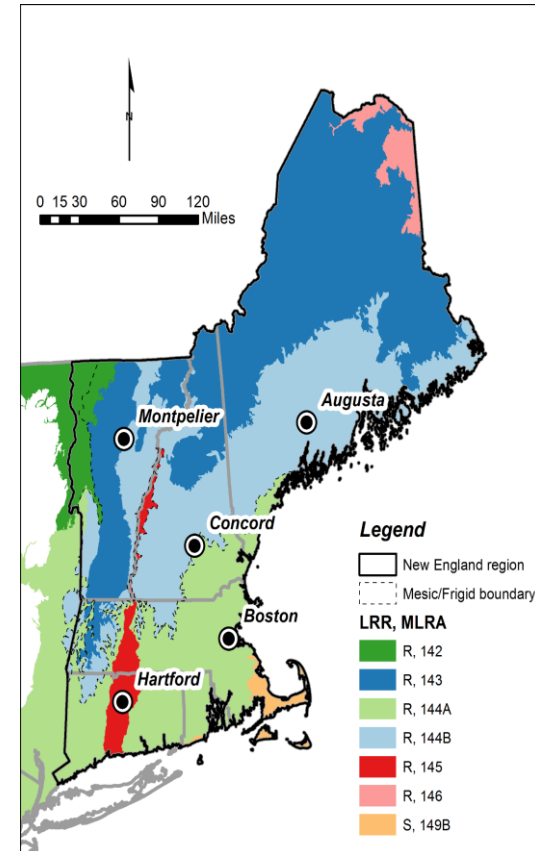


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Field Indicators for Identifying Hydric Soils in New England Version 4 April 2017 (Coming Soon)

- Will not duplicate the National Hydric Soil Indicators
- Will provide supplemental users' notes specific to use in New England
- Will contain New England specific indicators not found in the National Indicators
- Intended to supplement the National Hydric Soil Indicators by identifying hydric soils specific to New England
- Do not identify all hydric soils in New England



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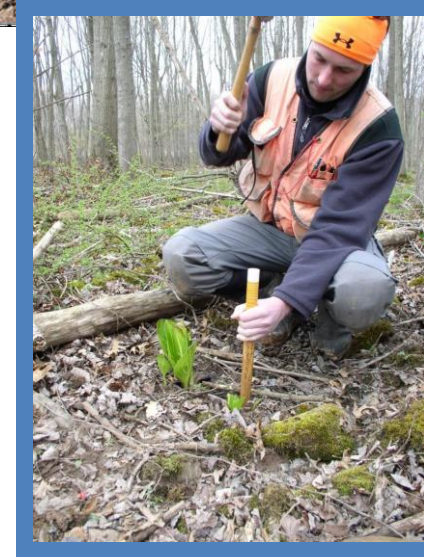
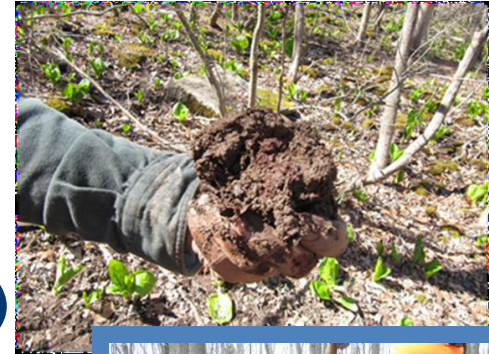
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Example of a New England Indicator

NE-PF1. - Glaciated Northeast Red Parent Material

Technical Description: A layer derived from red parent materials that is at least 15 cm (6 in) thick, starting at a depth less than or equal to 25 cm (10 in) from the soil surface with a hue of 7.5YR or redder, with a matrix that has a value and chroma of 2 through 4. The layer must contain 5 percent or more distinct or prominent depletions and/or redox concentrations occurring as soft masses or pore linings.



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